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(58) Field of Search

UK CL (Edition P) G2E EKE, G5C CDBP

INT CL⁶ G03B, G09F

(54) Display means

(57) A display means for displaying information to the interior of a vehicle by means of a window of the vehicle, where the display means comprises an elongate screen 15 disposed generally parallel to the direction of travel of the vehicle wherein the screen is visible to the occupant of the vehicle, said screen being provided with a plurality of images 16 displayed sequentially on said screen wherein each image differs from each image adjacent said image, such that when the vehicle is moving a moving image is created due to persistence of vision of an occupant of the vehicle. The images may be elongated in the direction of travel of the vehicle (Figure 2). Means may be provided to at least partially obscure some of the displayed information not opposite the vehicle window (Figure 3 to 5, 15 and 16, 17 and 18 - in the latter by the use of L.C.D. occluding screens). The information may be displayed on an electronic screen (Figure 6) and may be caused to move along the screen. In relation to Figure 1, the images may be projected on to the screen, suitably by means of a laser projector (20, Figure 7). The projector may be mounted on the vehicle (Figures 7 and 8), or slidably mounted on a rail (23, Figures 9 and 10). In further embodiments, the information may be on a side wall of the vehicle (35, Figure 11), or within the structure of the window of an underground train and arranged to only appear under external low lighting conditions, such as in a tunnel (Figures 13 and 14).

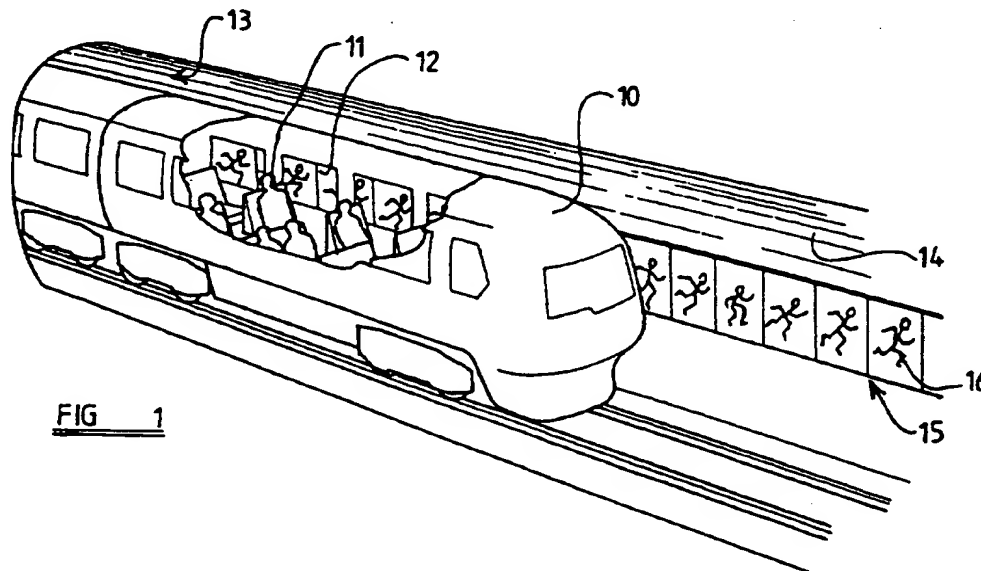


FIG 1

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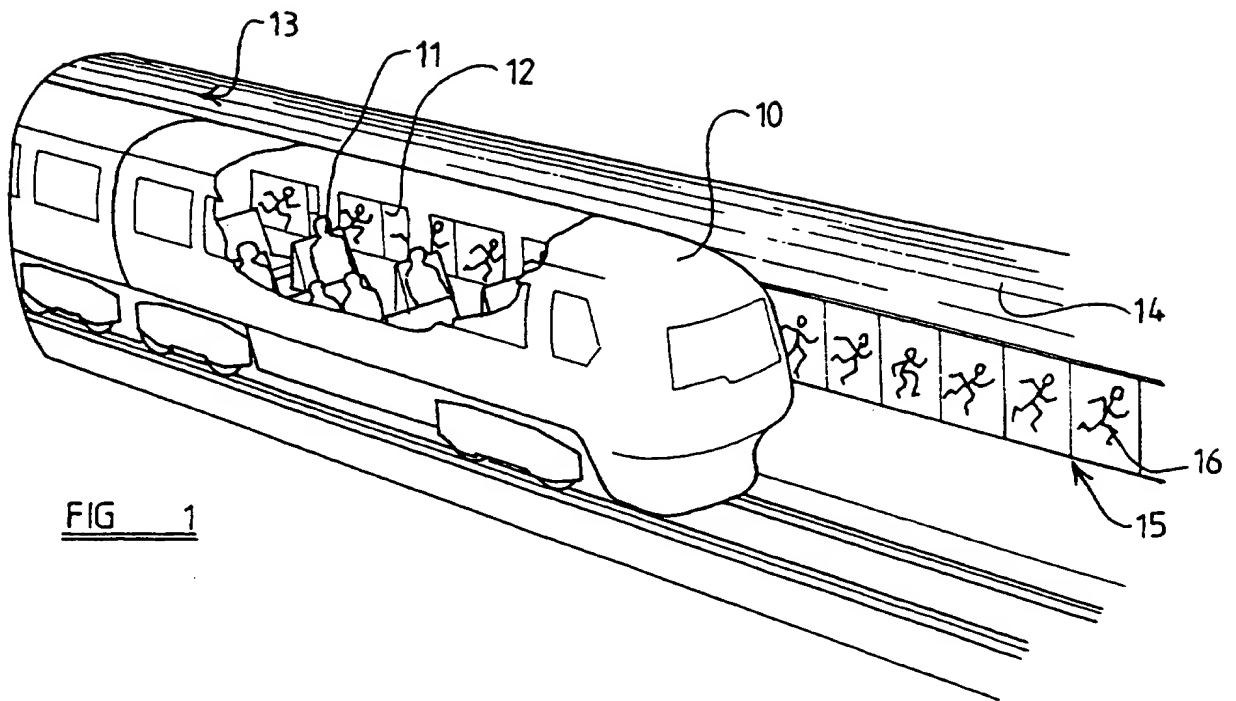


FIG 1

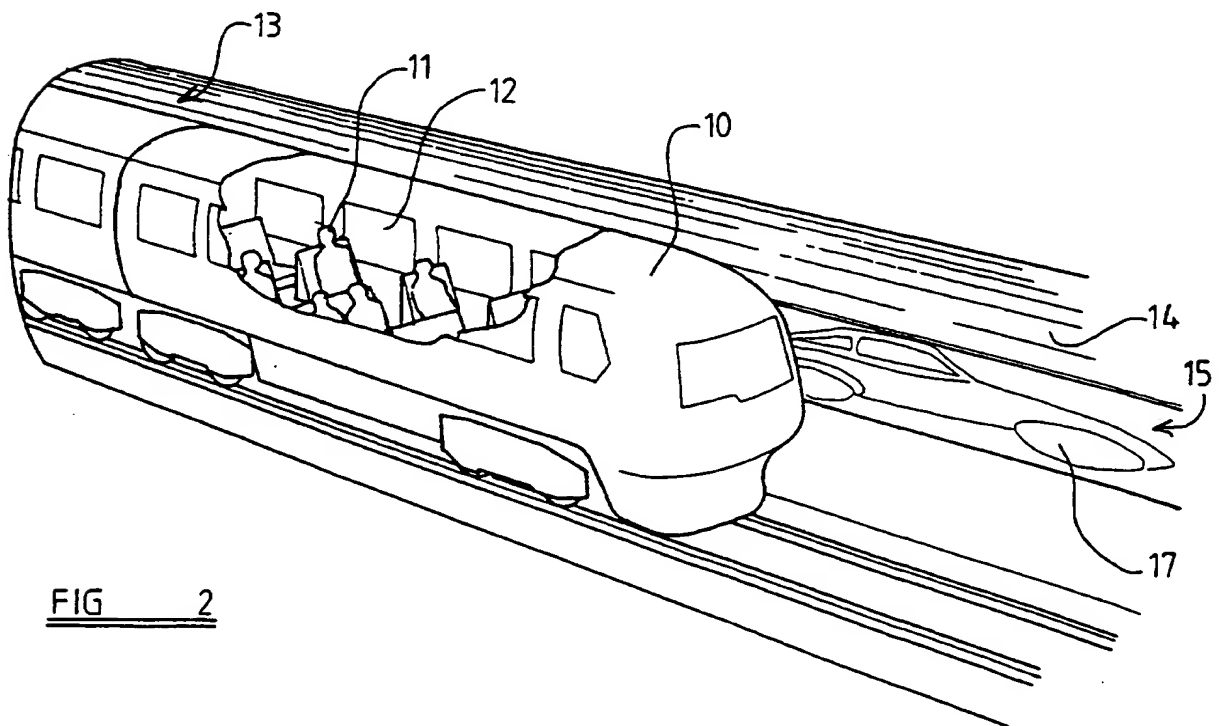
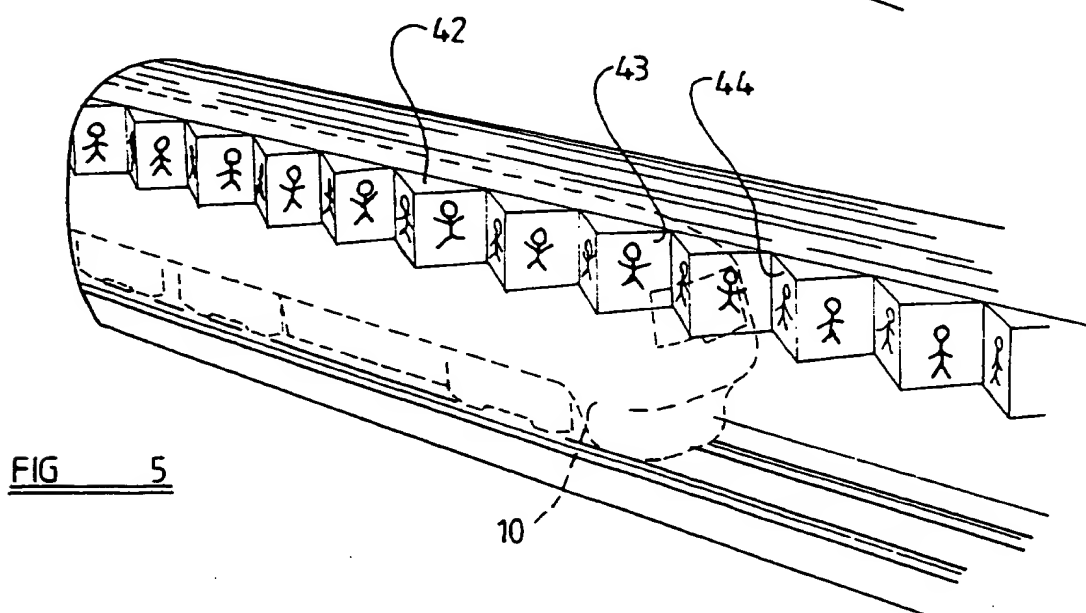
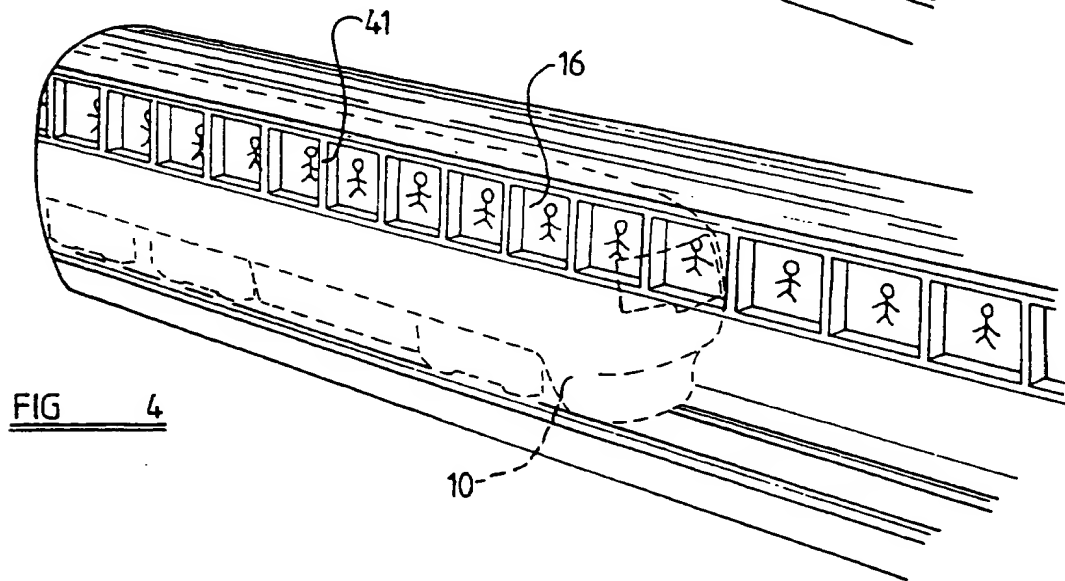
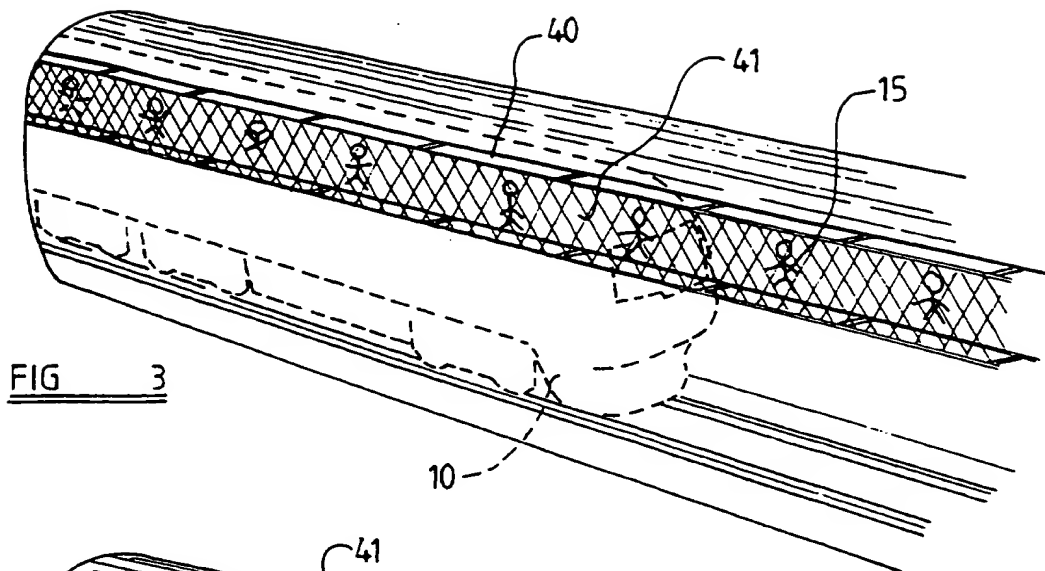
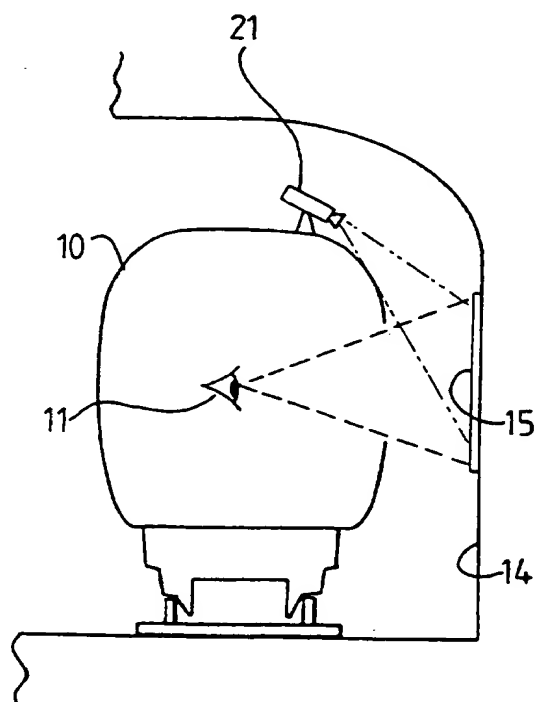
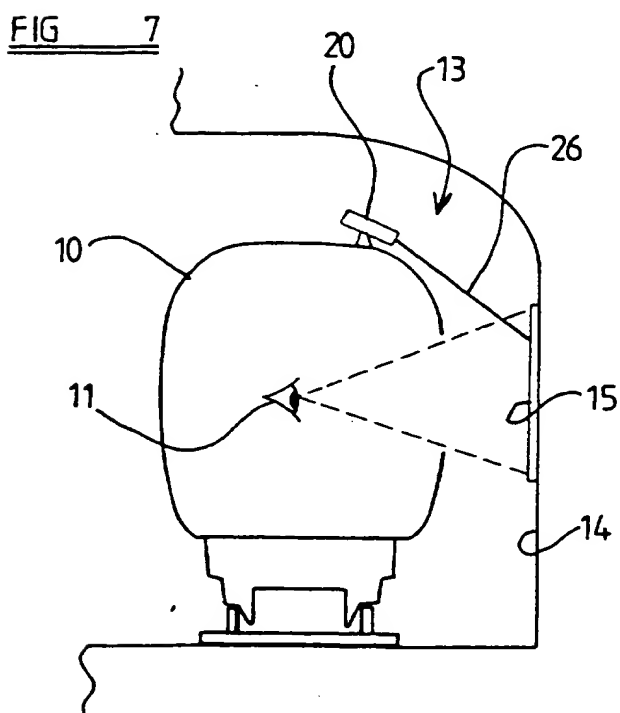
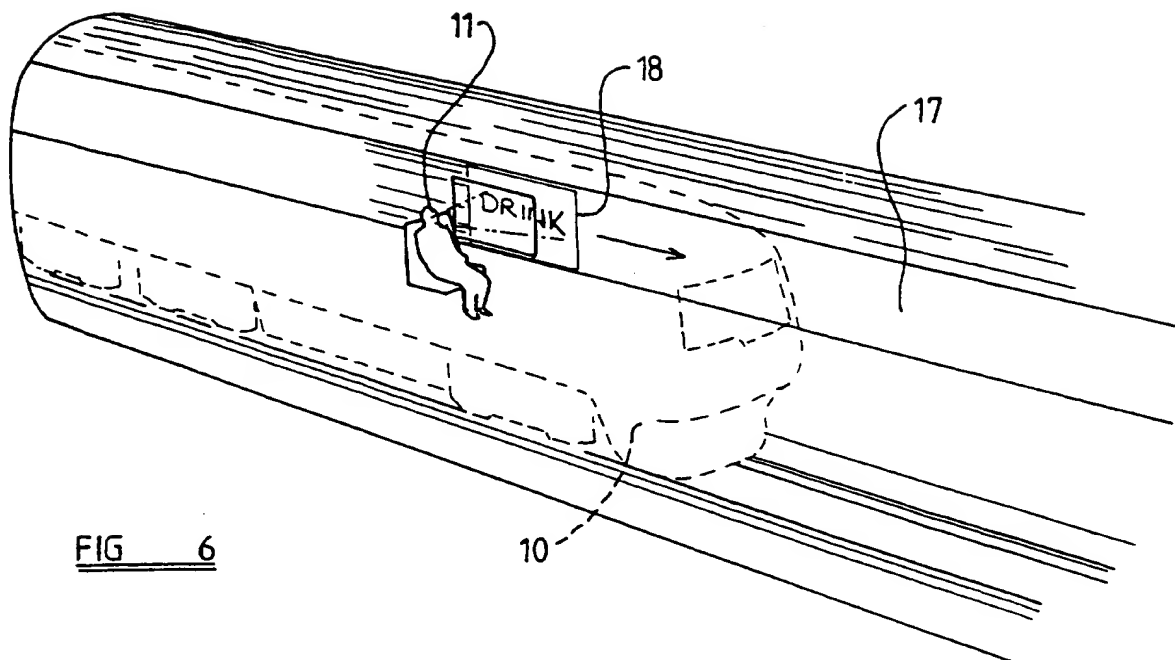


FIG 2

2 / 7





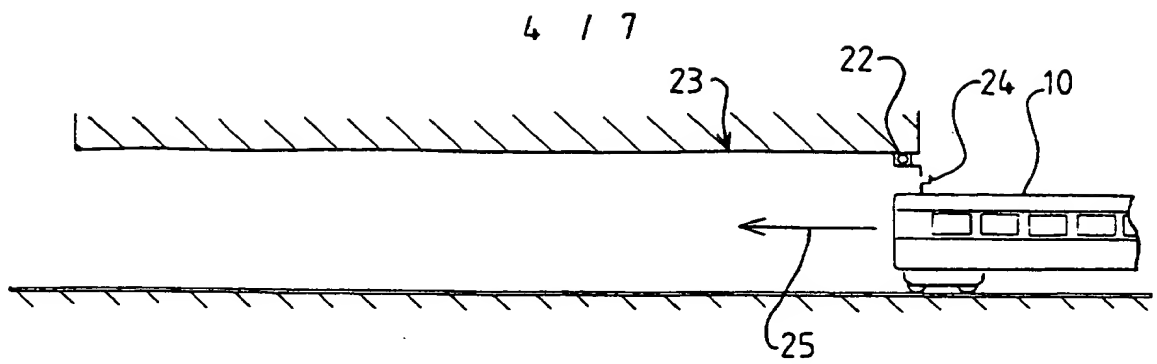


FIG 9

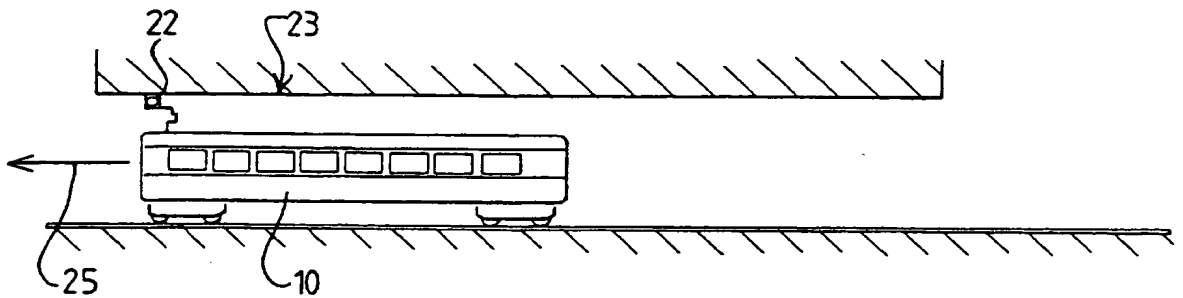


FIG 10

FIG 11

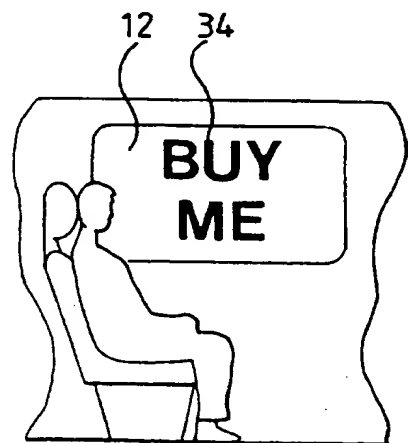
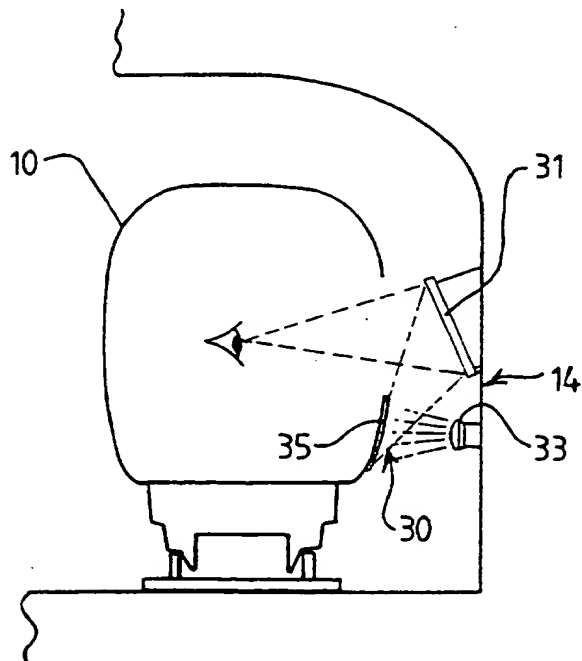


FIG 12

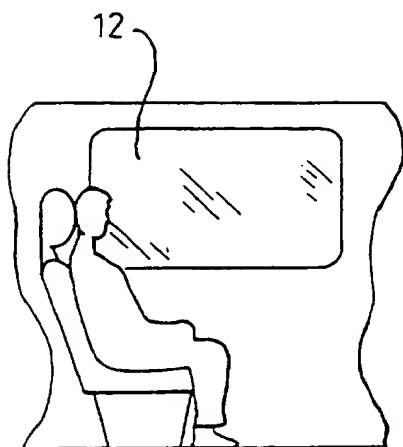


FIG 13

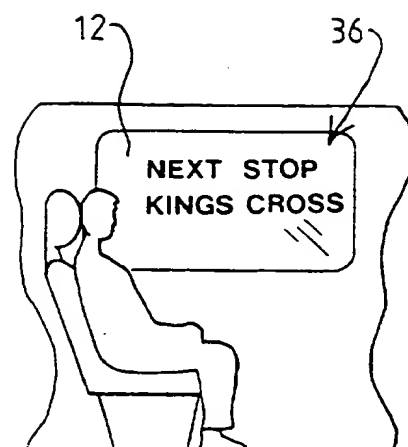


FIG 14

FIG 15

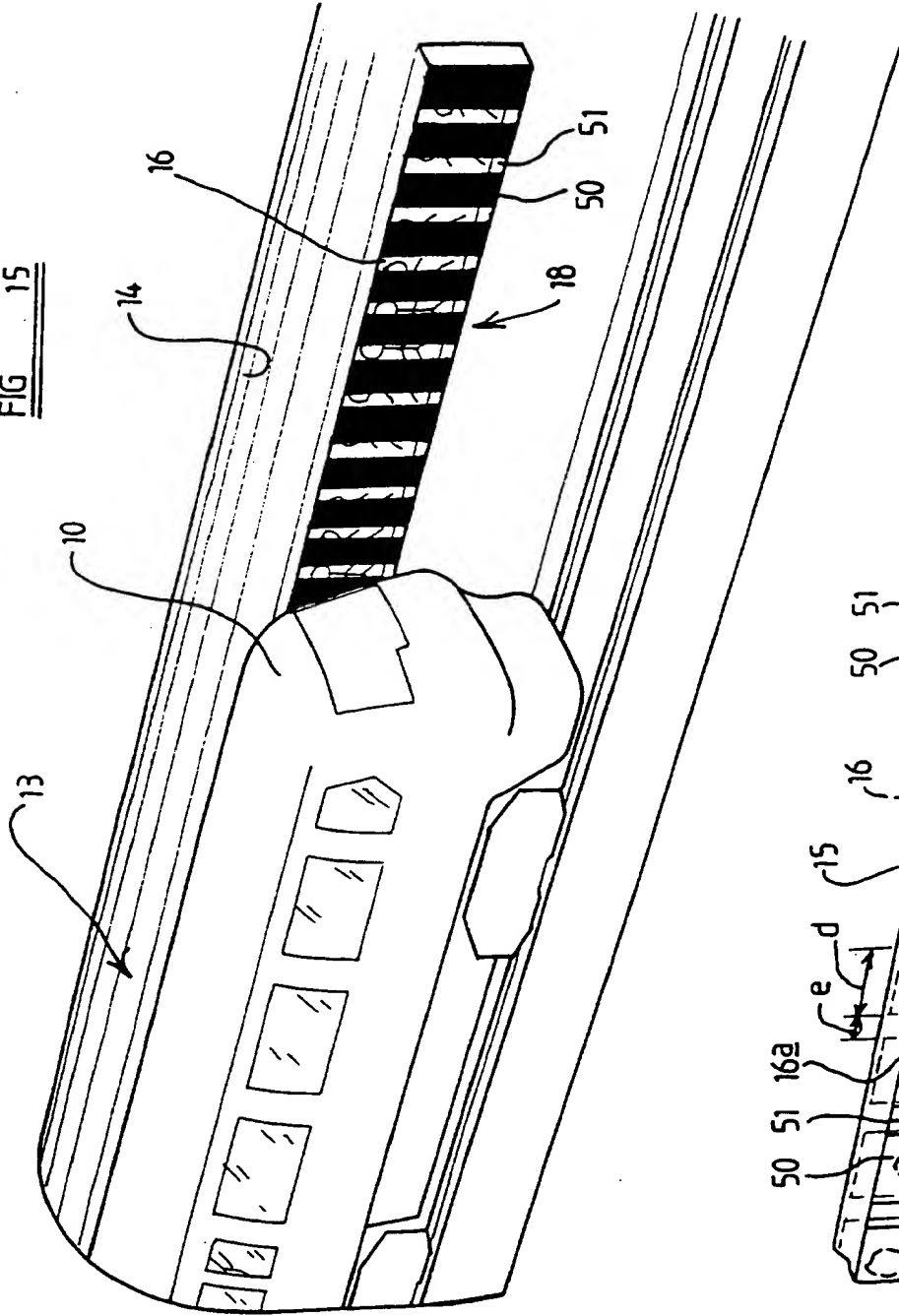


FIG 16

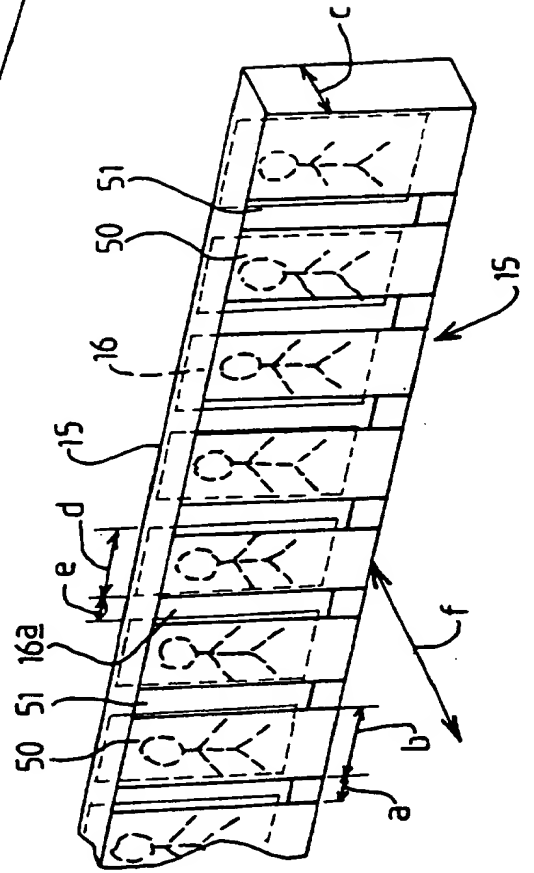


FIG 17

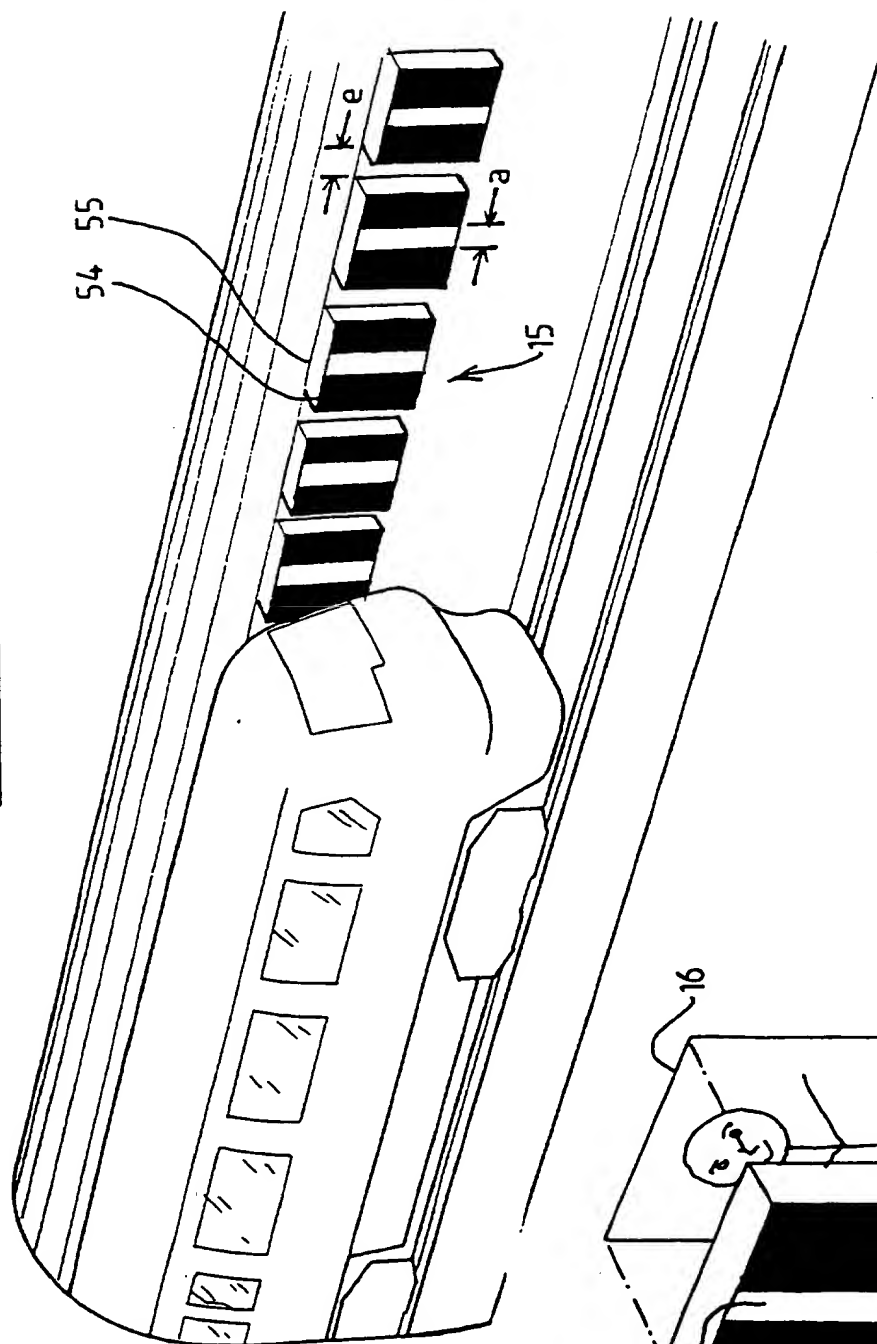
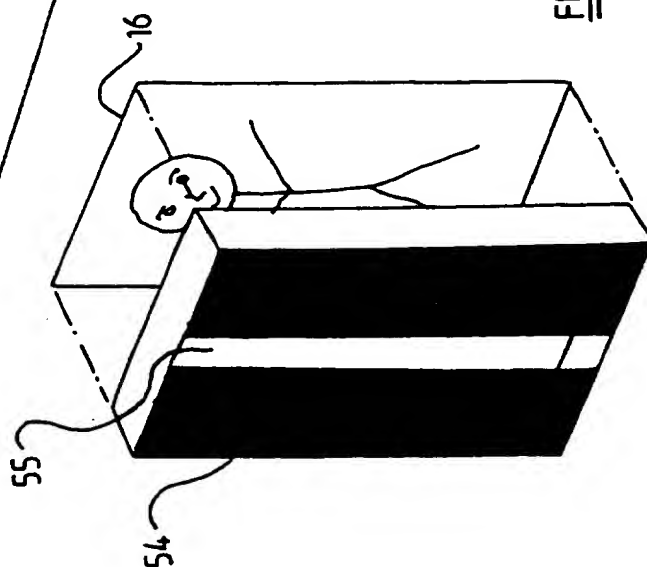


FIG 18



Title: A Means for and a Method of Displaying Information**Description of Invention**

This application relates to a means for and a method of displaying information such as pictures and text, to the interior of a vehicle. As a result the information is visible to an occupant of the vehicle.

Presenting information to an occupant of a vehicle is difficult in situations where the vehicle is moving and display means such as billboards or signs are unsuitable, for example in tunnels. Furthermore, there is an interest in selling advertising space for displaying information within the vehicle. The area available for such displays is restricted by the presence of windows in the walls of the vehicle.

The objects of the invention are therefore to provide a new or improved means for and method of displaying information.

According to a first aspect of the present invention, we provide means for displaying information to the interior of a vehicle by means of a window of the vehicle.

In a first more specific aspect of said first aspect of the present invention, there is provided an elongate screen adapted to be disposed generally parallel to the direction of travel of the vehicle, whereby the screen is visible to an occupant of the vehicle, said screen being provided with a plurality of images displayed sequentially on said screen wherein each image differs from each image adjacent said image, such that the vehicle is moving a moving image is created due to persistence of vision of an occupant of the vehicle.

According to a second aspect of the present invention we provide a method for displaying information to the interior of a vehicle by means of a window of the vehicle.

According to a first more specific aspect of the second aspect of the invention we provide a method for displaying information to the interior of a moving vehicle so as to be visible to an occupant of the vehicle such that the display information appears as a moving image, comprising providing a screen

according to the first more specific aspect of the first aspect of the invention, disposing on said screen a plurality of images displayed sequentially wherein each image differs from each image adjacent said image, and viewing said images from a vehicle in motion, said images being adapted such that when viewed by said occupant of a vehicle moving at an appropriate speed, the images appear to move due to persistence of vision.

Preferably the images are adapted such that when the vehicle is travelling at an appropriate speed, at least 15 images per second and ideally 25 images per second are displayed to the occupants of the vehicle.

In a second more specific aspect of the first aspect of the invention, the display means may comprise an elongate screen adapted to be disposed generally parallel to the direction of travel of the vehicle where the information displayed on said screen is elongated parallel to the elongate direction of the screen and hence to the direction of travel of the vehicle.

In a second more specific aspect of the second aspect of the invention, we provide a method for displaying information to the interior of a moving vehicle, comprising providing a screen according to the first more specific aspect of the first aspect of the invention, presenting information upon said screen, said information being elongated parallel to the direction of travel of the vehicle such that on being viewed by an occupant of a vehicle moving at an appropriate speed, said information appears undistorted.

In either of the second more specific aspects of the invention, the information may be illuminated by at least one of the internal illumination of the vehicle, by a light attached to an external wall of the vehicle or by a light fixed relative to the screen, or backlit as desired.

In any one of the preceding more specific aspects of the invention, occulting means may be provided to obscure partially said information.

Said means may be provided at least partially to obscure said information which is not located opposite the vehicle window.

Said occulting means may comprise elongate members disposed between the screen and the vehicle, each member having a cross-section such that

the width of the member in one direction is much greater than its width in the perpendicular direction, the members being disposed such that the direction in which the member has its greater width is generally perpendicular to the screen.

Said members may be disposed in a grid.

Alternatively, where the information is displayed according to the first more specific alternative of either aspect of the invention, said members may be disposed vertically between each image.

In any of the preceding more specific aspects of the invention, the screen may comprise a series of sub-screens disposed vertically at an angle to a direction in which, in use, is the direction of travel of the vehicle.

Each alternate sub-screen may be angled in the opposite direction to those adjacent said sub-screen, producing a screen having a "zig-zag" profile when viewed from above.

In a third more specific aspect of the first aspect of the invention, the display means may comprise an elongate electronic type screen adapted to be disposed generally parallel to the direction of travel of the vehicle and suitable control means for said screen, whereby information may be displayed at any one of a plurality of locations disposed along the length of the screen.

Said electronic type screen may comprise a liquid crystal display screen, or a cathode ray tube screen, or a thin-film-technology screen, or any appropriate type of screen as may be desired to create and display thereon said information.

Said screen may comprise an array of smaller screens, arranged in a direction generally parallel to the direction of travel of the vehicle.

Said display means may further comprise sensor means adapted to sense the position of the vehicle relative to said screen, said sensor means being linked to said control means such that said control means may display the desired information at an appropriate location on said screen adjacent said vehicle.

Said information may comprise still or moving pictures or text as desired.

According to a third more specific aspect of the second aspect of the present invention a method of displaying information to the interior of a moving vehicle may comprise providing an elongate electronic type screen and control means according to the third more specific aspect of the first aspect of the invention and displaying information upon said screen and varying the location of said information upon said screen as the vehicle passes said screen, the speed and direction at which the image is moved along said screen matching that of said vehicle such that when viewed by an occupant of the vehicle, said information appears to be in a position fixed relative to the vehicle.

Said method may further include the step of detecting the position of said vehicle relative said screen and determining the desired location at which to display the information upon said screen accordingly.

In a fourth more specific aspect of the first aspect of the invention, the display means may comprise a screen disposed generally parallel to the direction of travel of the vehicle, with projection means being disposed such that information is projected onto said screen.

Said projection means may be a laser projector whereby images are formed by the direction of a laser beam.

Alternatively said projection means may be a photographic projector, such that images from photographic slides or films are displayed on said screen.

Said projection means may be adapted to be mounted on the vehicle.

Alternatively, said projection means may adapted to be slidably attached to a rail or other elongate mounting means disposed generally parallel to the direction of travel of the vehicle, such that on passage of the vehicle parallel to the suspension means, said projection means is moved in a direction parallel to the direction of travel of the vehicle and the same speed.

Said projection means may be adapted to be movable by releasable mechanical contact between the vehicle and the projection means such that the projector is moved along the suspension means by the vehicle.

Power may be supplied to the projection means by an electrical connection being provided between the vehicle and the projector such that electrical power is supplied to the projector by the vehicle.

In a fifth more specific aspect of the first aspect of the invention, the display means may comprise a mirror adapted to be disposed generally parallel to the direction of travel of the vehicle, the information being located in an information region on the external wall of the vehicle facing the mirror, the mirror being disposed such that a reflection of said region is visible to the interior of the vehicle. The information provided on the vehicle is laterally inverted such that when viewed in the mirror, the images appear correctly orientated.

The information region provided on the side of the vehicle may be lit by lights provided fixed relative to the mirror, or by lights attached to the vehicle, or may be back lit as desired.

According to a sixth more specific aspect of the first aspect of the invention the display means comprises a window of the vehicle having a transparent screen such as a glass pane but which may comprise any other suitable transparent screen such as a perspex screen, with information disposed on a surface of the screen of said window or within a region defined by a surface of the screen exposed to the exterior of the vehicle and a surface of the screen exposed to the interior of the vehicle.

The information to be displayed may be formed from a reflective film, said film being characterised in that when said film has different levels of illumination on either side, said film appears mainly reflective when viewed from the side having greater illumination and mainly transparent when viewed from the side having lesser illumination, such that when the level of illumination within the vehicle is greater than that external to the vehicle, the film appears reflective and the information becomes discernable.

Alternatively, said information display means may comprise a liquid crystal display contained within the volume of the screen.

Preferably, said liquid crystal display screen may be provided with back lighting means such that when the level of illumination within the vehicle is greater than that outside the vehicle, the visibility of the image may be enhanced.

Means may be provided to provide the information displayed according to the invention in any of its more specific aspects with an audio accompaniment as desired.

Preferably, in all of the above aspects the vehicle, such as a train, is adapted for use in tunnels.

Conveniently, the walls of said tunnel may be adapted to provide the screen parallel to the direction of travel of the vehicle as described hereinbefore in the first more specific aspect of the invention.

According to a second aspect of the inventive producta method for displaying information to the interior of a vehicle by means of a window of the vehicle.

The displayed information may appear as a moving image to an occupant of the vehicle and the method may comprise providing a screen disposed generally parallel to the direction of travel of the vehicle, the screen having disposed thereon a plurality of images displayed sequently wherein each image differs from each image adjacent said image and viewing said images from a vehicle in motion, said images being adapted such that when viewed by said occupant of a vehicle moving at an appropriate speed, the images appear to move due to persistence of vision.

The images may be adapted such that when the vehicle is travelling at an appropriate speed, at least 15 images per second are displayed to the occupants of the vehicle.

The method may comprise providing an elongate electronic type screen disposed generally parallel to the direction of travel of the vehicle and having control means for the screen and displaying information upon said screen and varying the location upon said screen as the vehicle passes said screen, the speed and direction of which the image is viewed along said screen matches that of said

vehicle so that when viewed by an occupant of the vehicle said image appears to be in a position fixed relative to the vehicle.

The method may further include the step of detecting the position of said vehicle relative to said screen and determining a desired location at which to display the information upon said screen accordingly.

The method may comprise the steps of providing a display means according to any one of claims 1 to 41 and moving a vehicle past said screen at an appropriate speed to display information to an occupant of the vehicle.

The invention will now be described by way of example only by reference to the following figures wherein:

Figure 1 shows a first embodiment of the invention wherein the vehicle is shown as a train adapted to travel mainly in tunnels,

Figure 2 shows a second embodiment of the invention where the information is displayed elongated parallel to the direction of travel of the vehicle,

Figure 3 shows the embodiment of the invention as shown in Figures 1 and 2 with the addition of means for obscuring the information not opposite the window of the vehicle in the form of a grid of elongate members,

Figure 4 shows the embodiment of the invention as shown in Figure 1 with the addition of elongate members disposed vertically between the images to obscure at least partially those images not opposite to the vehicle window,

Figure 5 shows the embodiments of the invention as shown in Figures 1 and 2 whereby the information is displayed on a "zig-zag" screen,

Figure 6 shows another embodiment of the invention in which is provided an elongate electronic type screen,

Figure 7 shows another embodiment of the invention in which is provided a laser projector mounted on the vehicle, and

Figure 8 shows another embodiment of the invention in which is provided a slide or film projector similarly mounted,

Figure 9 shows another embodiment of the invention in which is provided a suspended projector just prior to contact by the train and

Figure 10 shows the embodiment of Figure 6 in which the suspended projector and vehicle are in motion,

Figure 11 shows another embodiment of the invention where information located on the side of the vehicle is displayed to the interior of the vehicle by a mirror,

Figures 12 and 13 show another embodiment of the invention in which information formed from a reflective film is disposed on the surface of the transparent screen of the window where the level of illumination is higher within and outside to the vehicle respectively, and

Figure 14 shows another embodiment of the invention in which is provided a vehicle window having a liquid crystal display.

Referring now to Figure 1, there is shown a vehicle 10, in this case a train, having, an interior 11 in which occupants are conveyed and which is provided with windows 12, the train being adapted to travel in tunnels 13. A screen comprising a generally vertical surface 15 is disposed substantially parallel to the direction of travel of the vehicle 10, being further disposed such that the screen is easily visible to an occupant of the vehicle 10. A plurality of images 16 is displayed upon the screen 15, each image varying slightly from the images adjacent to it, such that when viewed from a vehicle in motion at a suitable speed, the occupants 11 see at least one image as appropriate which is apparently animated an effect similar to that achieved by children's "flick books" or motion pictures. This effect depends on the familiar phenomenon of persistence of vision, the images 16 being of such a size, variation and separation that when the train 10 is moving at its normal speed, an occupant sees at least 15 and preferably 25 images per second. Alternatively, as shown in Figure 2, in which the same reference numerals are used for corresponding parts as are used in Figure 1, where it is desirable to show information which can be perceived clearly by the occupants of the vehicle whilst the vehicle is in motion, the information 16 is distorted by elongation in a direction parallel to the direction of travel of the vehicle 10.

In either of the preceding Figures, it may be desirable to at least partially obscure the information not opposite the vehicle window 12. In Figure 3, in which the same reference numerals are used for correspond parts as are used in Figure 1, this information is at least partially obscured by a grid 40 of elongate members 41, said elongate members 41 having a narrow cross-section when viewed in a direction perpendicular to the screen 15. The width of the elongate members 41 in a direction perpendicular to the screen 15 is such that, on viewing the information displayed on said screen is at an angle not perpendicular to the screen 15, elongate member 41 at least partially obscures said information. Alternatively as shown in Figure 4, in which the same reference numerals are used for corresponding parts as are used in Figure 1, where the information is displayed according to the first embodiment of the invention shown in Figure 1, the elongate members 41 may be disposed vertically between each image 16.

In either of the embodiments of the invention as shown in Figures 1 and 2 the screen may comprise a "zig-zag" screen 42, where different information may be displayed on opposed faces 43, 44 of the "zig-zag" such that different information is perceived by an occupant of the vehicle 10 depending on the direction in which said occupant is facing.

In Figure 6 display means are shown wherein information is displayed on an elongate electronic type screen 17. Appropriate control means (not shown) are provided such that the information 18 may be displayed at any one of a plurality of locations on the screen 17. By varying the location of the information 18 upon the screen 17 as the vehicle 10 passes the screen 17 such that the speed and direction of the image on the screen 17 matches that of the vehicle 10, the occupants 11 of the vehicle 10 will see the information 18 apparently in a position fixed relative to the vehicle 10.

Figures 7 to 10 show images are projected onto a screen as described above in relation to Figure 1. The projection means may be in the form of a laser projector 20 where the desired image is formed by directing a laser beam 26 sufficiently quickly that the occupants 11 see a continuous image due to

persistence of vision. Alternatively, the projection means may comprise a photographic slide or film projector 21. In both Figures 7 and 8, the laser projector 20 and slide projector 21 are shown mounted on the vehicle 10. An alternative configuration is shown in Figure 9 and 10 wherein the projector 22 is slidably mounted on a rail 23. The vehicle 10 has connection means 24 which releasably engage with means on the projector 22. When the vehicle 10 passes the rail 23 the engagement means 24 engage with the projector 22 such that the projector 22 is drawn along the rail 23 by the vehicle 10. The engagement means 24 may also include electrical contact means such that the projector 22 is supplied with electrical power from the vehicle 10.

A further embodiment of the invention is illustrated in Figure 11, wherein the information which is to be displayed is mounted on the side wall 35 of the vehicle 10, the information 30 being laterally inverted such that when viewed by an occupant conveyed in the interior 11 of the vehicle 10 reflected in the mirror 31 provided on the tunnel wall 14, the image appears to be correctly oriented. Illumination means 33 are provided, here shown attached to the tunnel wall 14.

Figures 12 to 14 illustrate the invention in a further embodiment whereby the display means are located on the surface of the transparent screen or in the region defined by a surface of the screen exposed to the exterior of the vehicle and a surface of the screen exposed to the interior of the vehicle. Where the information 34 to be displayed is formed from a reflective film such as that known for use in buildings, when the level of illumination on the side of the film facing the viewer is greater than that behind the film, the film appears mainly reflective and the image is visible as shown in Figure 12. When the illumination on the opposite side of the film to the viewer is greater than that on the same side as the viewer, the film appears mainly transparent and no image is visible as shown in Figure 10. Thus if used in underground trains, when in relatively brightly lit stations, the window would appear transparent but in unlit tunnels the level of illumination inside the train would be much greater than the external level of illumination and hence the image would be visible to the occupants 11.

Alternatively, said display means may comprise a liquid crystal display 36.

In a further embodiment, shown in Figures 15 and 16, in which the same reference numerals are used for corresponding parts as are used in Figure 1, the screen 15 is provided with images 16 disposed in a sequence with each image differing slightly from those adjacent to it in a manner similar to that described with reference to Figure 1. In this embodiment the images 16 are separated by intermediate regions 16a which are blank or plain so as not to interfere with the viewer's appreciation of the moving. A series of occulting members 50 such as black bars, are positioned in front of the images and spaced therefrom. The occulting members 50 are separated by narrow viewing slots or windows 51. As the viewer travels past at speed and sees the stationary occulting members 50 from different angles, they have a shutter like effect for the images. The resultant flicker is unnoticeable and allows the phenomenon of persistence of vision to occur so that the viewer see a motion picture. This is in effect similar to a Zoetrope or a cinema projector. The size and spacing of the occulting members 50 and the images is arranged to produce a desired quality of animation at the normal speed of the vehicle. The occulting members 50 are, in the present example, removable so that the images 16 can be changed. If desired, of course, the occulting members may be fixed.

The extent of each image visible at any one time along a viewing slot or window 51 may be varied from a complete image to part of an image so that the image is scanned as the viewer moves past a viewing window. If desired an obstructing member, not shown, similar to the members 41 described above, may be provided between images so that only a single image can be seen through a slot or window 51 as appropriate.

Referring now to Figure 16 each slot or window has a width a whilst each occulting member 50 has a width b . The occulting members 50 are disposed in front of the screen 15 by a distance c . Each image 16 has a width D and is separated by an intermediate region 16 of width e . The screen and occulting

members are arranged to be viewed by a viewer spaced at a distance f in front of the occulting members.

In a preferred example, 8 times the distance a equals the distance b , but the multiplier of a may be at least 6 to obtain a desired persistence of vision effect without significant flicker. Whilst there is no real upper limit to the value of a multiplier, in practical terms the upper limit is 12.

The distance a preferably equals the distance e whilst the distance b equals the distance d and 6 times the distance c equals the distance f .

Preferably the slot or window 51 is centred on the centre of the image 16.

The above described parameters may be varied as necessary to achieve the desired effect.

Similar occulting means may be used with the angled screens and zig-zag screens described hereinbefore. Preferably the occulting members are similarly angled or zig-zag so as to be generally parallel to a screen.

In another embodiment, not illustrated, if desired a strobe light may be provided synchronised with the spacing of the images and their size and the speed of a vehicle so that the vehicle see successive images at each flash of the strobe light.

A further embodiment is illustrated in Figures 17 and 18. In this embodiment the display screen 15 comprises a plurality of individual display screens which are spaced and sized appropriately so that a viewer in a vehicle passing at its normal speed will see sufficient frames per second for animation to be perceived due to the phenomenon of persistence of vision.

Each screen comprises a liquid crystal display (LCD) disposed in a forward part of the screen and an image 16 similar to the images described hereinbefore are disposed in a rearward part of the screen. Again each image is slight different from adjacent images so that viewing of the images in sequence produces animations.

The liquid crystal display comprising a forward part of each screen comprises an occulting portion 54 except for a relatively narrow and transparent

vertical slit 55. The occulting part 54 is, in the present example, black and the transparent sheet 55 moves across the image in the opposite direction to the movement of the vehicle. Accordingly, as a viewer travels past the viewer sees each image through the viewing slit moving across the image in the opposite direction. When the viewing slit 55 has passed across the image the process is repeated. The LCD is operated so as to cause such movement of the slit 55.

The LCD screen causes the viewing slit 55 of each individual screen part to move together so that the viewer sees a high frequency animation. The speed of the LCD screens is controlled by sensors which controls the speed of motion of the viewing slits according to the speed of the vehicle.

The effect created is similar to that of a Phenakistoscope.

Again the screens are designed, in the present example, so that the images 16 disposed behind them can be easily and quickly changed. The configuration of the screens in respect of size and spacing and of the slits and images is essentially as described hereinbefore in connection with Figures 15 and 16.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS

1. A display means for displaying information to the interior of a vehicle by means of a window of the vehicle.
2. A display means according to claim 1 wherein there is provided an elongate screen adapted to be disposed generally parallel to the direction of travel of the vehicle, whereby the screen is visible to an occupant of the vehicle, said screen being provided with a plurality of images displayed sequentially on said screen wherein each image differs from each image adjacent said image, such that the vehicle is moving a moving image is created due to persistence of vision of an occupant of the vehicle.
3. A display means according to claim 1 wherein the display means comprises an elongate screen adapted to be disposed generally parallel to the direction of travel of the vehicle wherein the information displayed on said screen is elongated parallel to the elongate direction of the screen and hence to the direction of travel of the vehicle.
4. A display means according to any one of the preceding claims wherein the information is illuminated by at least one of internal illumination of the vehicle by a light attached to an external wall of the vehicle or by a light fixed relative to the screen, or backlit.
5. A display means according to any one of the preceding claims wherein the occulting means are provided to obscure partially said information.
6. A display means according to any one of the preceding claims wherein said means is provided at least partially to obscure said information which is not located opposite the vehicle window.

7. A display means according to claims 5 and 6 wherein said means occulting comprises elongate members disposed between the screen and the vehicle, each member having a cross-section such that the width of the member in one direction is much greater than its width in the perpendicular direction, the members being disposed such that the direction in which the member has its greater width is generally perpendicular to the screen.

8. A display means according to any one of claims 5 to 7 wherein said members are disposed in a grid.

9. A display means according to any one of claims 5 to 7 wherein the information is displayed as claimed directly or indirectly in claim 2 said members are disposed vertically between each image.

10. A display means according to claim 5 wherein an occulting member is disposed so as to be spaced in front of each image, the occulting members having a viewing opening therein or therebetween through which a respective image may be viewed.

11. A display means according to claim 10 wherein each viewing opening and associated image are fixed relative to each other.

12. A display means according to claim 10 or claim 11 wherein each viewing opening is relatively narrow compared to the width of the respective image.

13. A display means according to any one of claims 10 to 12 wherein an image is separated by an intermediate region from each leading and following image and the viewing opening is centred on said image.

14. A display means according to any one of the preceding claims wherein the screen comprises a series of sub-screens disposed vertically at an angle to a direction in which, in use, is the direction of travel of the vehicle.
15. A display means according to claim 14 wherein each alternate sub-screen is angled in the opposite direction to those adjacent said sub-screen, producing a screen having a "zig-zag" profile when viewed from above.
16. A display means according to claim 1 wherein the display means comprises an elongate electronic type screen adapted to be disposed generally parallel to the direction of travel of the vehicle and suitable control means for said screen, whereby information may be displayed at any one of a plurality of locations disposed along the length of the screen.
17. A display means according to claim 16 wherein said electronic type screen comprises a liquid crystal display screen, or a cathode ray tube screen, or a thin-file-technology screen, or any appropriate type of screen as may be desired to create and display thereon said information.
18. A display means according to claim 16 or claim 17 wherein said screen comprises an array of sub-screens, arranged in a direction generally parallel to the direction of travel of the vehicle.
19. A display means according to any one of claims 16 to 18 wherein said display means further comprises sensor means adapted to sense the position of the vehicle relative to said screen, said sensor means being linked to said control means such that said control means may display the desired information at an appropriate location on said screen adjacent said vehicle.
20. A display means according to any one of claims 16 to 19 wherein said information comprises still or moving pictures or text as desired.

21. A display means according to claim 10 wherein the viewing opening is moveable relative to the respective image.

22. A display means according to claim 21 wherein the viewing opening is adapted to be moved in a direction opposite to that in which the vehicle is to travel.

23. A display means according to claim 21 or claim 22 wherein the occulting means comprises a liquid crystal display which is operated to provide a moveable viewing window through which a respective image can be seen.

24. A display means according to claim 1 wherein the display means comprises a screen disposed generally parallel to the direction of travel of the vehicle, with projection means being disposed such that information is projected onto said screen.

25. A display means according to claims 24 wherein said projection means is a laser projector whereby images are formed by the direction of a laser beam.

26. A display means according to claim 24 wherein said projection means is a photographic projector, such that images from photographic slides or films are displayed on said screen.

27. A display means according to any one of claims 24 to 26 wherein said projection means is adapted to be mounted on the vehicle.

28. A display means wherein said projection means is adapted to be slidably attached to a rail or other elongate mounting means disposed generally parallel to the direction of travel of the vehicle, such that on passage of the vehicle parallel to the suspension means, said projection means is moved in a

direction parallel to the suspension means, said projection means is moved in a direction parallel to the direction of travel of the vehicle and the same speed.

29. A display means according to claim 28 wherein said projection means is adapted to be movable by releasable mechanical contact between the vehicle and the projection means such that the projector is moved along the suspension means by the vehicle.

30. A display means according to any one of claims 24 to 29 wherein power is supplied to the projection means by an electrical connection being provided between the vehicle and the projector such that electrical power is supplied to the projector by the vehicle.

31. A display means according to claim 1 wherein the display means comprises a mirror adapted to be disposed generally parallel to the direction of travel of the vehicle, the information being located in an information region on the external wall of the vehicle facing the mirror, the mirror being disposed such that a reflection of said region is visible to the interior of the vehicle. The information provided on the vehicle is laterally inverted such that when viewed in the mirror, the images appear correctly orientated.

32. A display means according to claim 31 wherein the information region provided on the side of the vehicle is lit by lights provided fixed relative to the mirror, or by lights attached to the vehicle, or is back lit.

33. A display means according to claim 1 wherein the display means comprises a window of the vehicle having a transparent screen with information disposed on a surface of the screen of said window or within a region defined by a surface of the screen exposed to the exterior of the vehicle and a surface of the screen exposed to the interior of the vehicle.

34. A display means according to claim 33 wherein the information to be displayed is formed from a reflective film, said film being characterised in that when said film has different levels of illumination on either side, said film appears mainly reflective when viewed from the side having greater illumination and mainly transparent when viewed from the side having lesser illumination, such that when the level of illumination within the vehicle is greater than that external to the vehicle, the film appears reflective and the information becomes discernable.
35. A display means according to claim 33 wherein said information display means may comprise a liquid crystal display contained within the volume of the screen.
36. A display means according to claim 35 wherein said liquid crystal display screen is provided with back lighting means such that when the level of illumination within the vehicle is greater than that outside the vehicle, the visibility of the image may be enhanced.
37. A display means according to any one of the preceding claims wherein means are provided to provide the information displayed with an audio accompaniment.
38. A display means substantially as hereinbefore described with reference to any one of Figures 1 to 11, Figures 12 and 13, Figure 14, Figures 15 and 16 or Figures 17 and 18.
39. A display means according to any one of the preceding claims in combination with a vehicle.
40. A display means according to claim 39 wherein the vehicle is adapted for use in a tunnel.

41. A display means according to claim 40 wherein the walls of said tunnel is adapted to provide the screen parallel to the direction of travel of the vehicle.

42. A method for displaying information to the interior of a vehicle by means of a window of the vehicle.

43. A method according to claim 42 wherein the displayed information appears as a moving image to an occupant of the vehicle and the method comprises providing a screen disposed generally parallel to the direction of travel of the vehicle, the screen having disposed thereon a plurality of images displayed sequently wherein each image differs from each image adjacent said image and viewing said images from a vehicle in motion, said images being adapted such that when viewed by said occupant of a vehicle moving at an appropriate speed, the images appear to move due to persistence of vision.

44. A method according to claim 43 wherein the images are adapted such that when the vehicle is travelling at an appropriate speed, at least 15 images per second are displayed to the occupants of the vehicle.

45. A method according to claim 42 comprising providing an elongate electronic type screen disposed generally parallel to the direction of travel of the vehicle and having control means for the screen and displaying information upon said screen and varying the location upon said screen as the vehicle passes said screen, the speed and direction of which the image is viewed along said screen matches that of said vehicle so that when viewed by an occupant of the vehicle said image appears to be in a position fixed relative to the vehicle.

46. A method according to claim 45 wherein said method further includes the step of detecting the position of said vehicle relative to said screen and determining a desired location at which to display the information upon said screen accordingly.

47. A method according to claim 42 comprising the steps of providing a display means according to any one of claims 1 to 41 and moving a vehicle past said screen at an appropriate speed to display information to an occupant of the vehicle.

48. A method substantially as hereinbefore described with reference to any one of claims 1 to 11, Figures 12 and 13, Figure 14, Figures 15 and 16 or Figures 17 and 18.